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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
ZAMAN, FAISAL M

ART UNIT	PAPER NUMBER
2112	

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Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/788,590	VOORHEES ET AL.
	Examiner	Art Unit	
	Faisal Zaman	2112	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>27 February 2004</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-18</u> is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-16</u> is/are rejected.

7)☒ Claim(s) <u>17 and 18</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>27 February 2004</u> is/are: a)☐ accepted or b)☒ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☒ Other: *See Continuation Sheet*.

Continuation of Attachment(s) 6). Other: Examiner-cited non-patent literature.

Claim Rejections - 35 USC § 112

4.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

5.   **Claims 1-14** are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention.

Regarding Claim 1, in lines 5-6, it is not clear as to what the internal fabric

couples the selected ones of the internal ports to. The examiner would interpret this

limitation, for examination purposes, to mean the internal fabric couples selected ones

of the internal ports to selected other internal ports of the plurality of SAS expander

component circuits.

Regarding Claims 6 and 7, it is not clear as to why the static fabric would be

configured at the reset of the MCM, since it is never modified during operation (ie. it is a

static fabric [see Applicant's specification, page 7, lines 23-25]). In addition, the

Applicant's specification (Page 8, lines 4-10) leads the examiner to believe that although

the internal fabric operates as a static fabric, it is still in fact a programmable fabric,

since "alterations in the program logic of control and coordination element 304 may

provide a different static configuration set of the MCM expander 300". Therefore, the

examiner would interpret this limitation, for examination purposes, to mean a

programmable fabric is configured at reset of the MCM.

All claims not specifically addressed are rejected due to a dependency.

Correction/clarification is therefore required.

DETAILED ACTION

Drawings

1.   The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: Page 9, lines 31-32, recites "Standard expander component 598 provides six internal ports (512 through 522)", however in Figure 5, only two ports are shown (512 and 514). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2.   The disclosure is objected to because of the following informalities:

Page 5, line 15, replace "complex and costly" (missing period) with --complex and costly.--.

Page 10, line 28, replace "Figure 4 s a flowchart" with --Figure 4 **is** a flowchart--.

Appropriate correction is required.

Claim Objections

3.   Claims 1-3, 12, 14, and 15 are objected to because of the following informalities:

Claim 1 recites "SAS" in line 2. Each of the terms of the acronym "SAS" should

be spelled out at the first occurrence of the acronym in the base claim of a group of

claims.

Claims 2 and 3 recite the limitation "the plurality of SAS expanders" in line 1.

There is insufficient antecedent basis for this limitation in the claims. The examiner

would interpret this limitation, for examination purposes, to mean "the plurality of SAS

expander component circuits".

Claim 12 recites "SMP" in line 2. Each of the terms of the acronym "SMP" should

be spelled out at the first occurrence of the acronym in the base claim of a group of

claims.

Claim 14 recites "PHY" in line 2. Each of the terms of the acronym "PHY" should

be spelled out at the first occurrence of the acronym in the base claim of a group of

claims.

Claim 15 recites "SAS" in line 1. Each of the terms of the acronym "SAS" should

be spelled out at the first occurrence of the acronym in the base claim of a group of

claims.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7.   **Claim 1-5 and 10** are rejected under 35 U.S.C. 103(a) as being unpatentable

over Yao et al. ("Yao") (U.S. Patent Publication No. 2003/0084219) in view of Bakke et

al. ("Bakke") (U.S. Patent Publication No. 2005/0071532).

Regarding Claim 1, Yao discloses a multi-chip module (MCM) (Yao, Figure 1,

item 10, Page 2, paragraph 29, "switch system") comprising:

A plurality of component circuits (Yao, Figure 1, item 15, Page 2, paragraph 29,

"line cards") each having a number of internal ports internal to the MCM (Yao, Figure 2,

item 35, Page 3, paragraph 32, "fabric interface port") and each having a number of

external ports for coupling to devices external to the MCM (Yao, Figure 1, item 20, Page

2, paragraph 29); and

An internal fabric coupling selected ones of the internal ports in selected ones of

the plurality of component circuits (Yao, Figure 1, item 25, Pages 2-3, paragraphs 29

and 31-32, "switch fabric").

Yao does not expressly disclose wherein the component circuits are SAS

expander component circuits, or that the devices which are coupled to the external ports

are SAS devices.

In the same field of endeavor (e.g. data processing networks), Bakke discloses a plurality of SAS expander component circuits (Bakke, Figure 4, items 0,1,102, Page 2, paragraph 18, "edge expanders") each having a number of internal ports (Bakke, Figure 4, item 120, Page 2, paragraph 20, "subtractive routing ports") and each having a number of external ports (Bakke, Figure 4, item 118, Page 2, paragraph 18, "direct routing ports") coupling to external SAS devices (Bakke, Figure 4, items 104,106,108,110,112,114, Page 2, paragraph 17).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined Bakke's teachings of data processing networks with the teachings of Yao, for the purpose of implementing resilient connectivity in a data processing network (see Bakke, Page 1, paragraph 11). Also, it would have been desirable as stated by Bakke for the data network system to prevent loss of data through increased fault tolerance (see Bakke, Page 1, paragraphs 2-3). Yao provides motivation to combine by stating it is an object of the invention to provide efficient connectivity between a variety of protocols in a switching system (see Yao, Page 1, paragraphs 4-5).

Regarding Claim 2, Bakke discloses wherein the plurality of SAS expander component circuits comprises a number of SAS expander components each having a number of internal ports (Bakke, Figure 4, item 120, Page 2, paragraph 20, "subtractive routing ports"). The prior art reference used for the rejection of this particular limitation is based on the examiner's assumption as discussed above.

Regarding Claim 3, Bakke discloses wherein the plurality of SAS expander

component circuits comprises a number of SAS expander components each having a

number of external ports (Bakke, Figure 4, item 118, Page 2, paragraph 18, "direct

routing ports"). The prior art reference used for the rejection of this particular limitation is

based on the examiner's assumption as discussed above.

Regarding Claim 4, the examiner takes Official Notice that static fabric in the

type of the system disclosed is a generally well-known type of internal fabric available in

the prior art at the time of the applicant's claimed invention, therefore it would have been

obvious to one of ordinary skill in the art to use static internal fabric.

Regarding Claim 5, the examiner takes Official Notice that a static fabric being

configured at manufacture in the type of system disclosed is well-known in the prior art

at the time of the applicant's claimed invention, therefore it would have been obvious to

one of ordinary skill in the art to configure the static fabric at manufacture of the MCM.

Regarding Claim 10, Bakke teaches coordination logic communicatively coupled

to the plurality of SAS expander component circuits to coordinate operation of the

plurality of SAS expander component circuits (Bakke, Page 2, paragraph 22, receipt of

data from one of the devices causes the edge expanders to use logic to determine

where the data is to be sent, therefore it would be obvious to one of ordinary skill in the

art that there is coordination logic within the edge expanders).

Claim Rejections - 35 USC § 103

8.   **Claims 6-9 and 15-16** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Yao-Bakke as applied to Claim 1 above, in further view of Barrow et

al. ("Barrow") (U.S. Patent Publication No. 2002/0188786).

Yao-Bakke discloses the invention substantially as claimed.

Yao-Bakke discloses the module of Claim 1.

Regarding Claim 6, Yao-Bakke does not expressly disclose wherein a

programmable fabric is configured at reset of the MCM.

In the same field of endeavor (e.g. a data storage system which consists of

communications between the system and external data exchanging devices), Barrow

teaches a programmable fabric (Barrow, Figure 5, item 302, Page 5, paragraph 38) that

is configured at reset (Barrow, Page 5, paragraph 44) of an MCM (Barrow, Figure 3,

item 26, Page 3, paragraph 25). The prior art reference used for the rejection of this

particular limitation is based on the examiner's assumption as discussed above.

Accordingly, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to have combined Barrow's teachings of a data storage

system which consists of communications between the system and external data

exchanging devices with the teachings of Yao-Bakke, for the purpose of decreasing

latency in moving data from external devices to the data storage system and vice versa
(see Barrow, Page 1, paragraph 5). Yao-Bakke provides motivation to combine by
stating it is an object of the invention to provide efficient connectivity between a variety
of protocols in a switching system (see Yao, Page 1, paragraphs 4-5).

Regarding Claim 7, Barrow teaches a control logic circuit (Barrow, Figure 5,
item 308, Page 5, paragraphs 38 and 43) to configure the programmable fabric at reset
of the MCM (Barrow, Page 5, paragraph 44). The prior art reference used for the
rejection of this particular limitation is based on the examiner's assumption as discussed
above.

Regarding Claim 8, Barrow discloses wherein the internal fabric (Barrow, Figure
5, item 302, Page 5, paragraph 38) comprises a programmable fabric (Barrow, Page 5,
paragraph 42).

Regarding Claim 9, Yao-Bakke discloses a SAS device (Bakke, Figure 4, items
104,106,108,110,112,114, Page 2, paragraph 17) coupled to an external port (Bakke,
Figure 4, item 118, Page 2, paragraph 18, "direct routing ports") of a SAS expander of
an MCM (Bakke, Figure 4, items 0,1,102, Page 2, paragraph 18, "edge expanders").

Yao-Bakke does not expressly disclose wherein a programmable fabric is
adapted to be configured by information from a SAS device coupled to an external port
of a SAS expander of the MCM.

In the same field of endeavor, Barrow teaches wherein a programmable fabric (Barrow, Figure 5, item 302, Page 5, paragraph 38) is adapted to be configured by information received from an external device (Barrow, Page 5, paragraph 42, the switch fabric 302 may be configured by I/O interfaces or control interfaces).

The motivation that was utilized in the combination of Claim 6, super, applies equally as well to Claim 9.

Claims 15-16 are directed to a method of the system of Claims 1-10. Yao, Bakke, and Barrow teach, either alone or in combination as stated above, the system as set forth in Claims 1-10. Therefore, Yao, Bakke, and Barrow also teach, either alone or in combination as stated above, the method as set forth in Claims 15-16.

Allowable Subject Matter

9.   **Claims 11-14** would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

10.   **Claims 17-18** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Prior Art of Record

11.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure. Crater (U.S. Patent No. 6,115,772) discloses a system and

method for host expansion and connection adaptability for a SCSI storage array.

Miller (U.S. Patent No. 6,553,446) discloses a modular input/output controller capable of

routing packets over busses operating at different speeds. Matsunami et al. (U.S.

Patent Publication No. 2004/0158673) discloses a disk storage system including a

switch. Galloway (U.S. Patent Publication No. 2004/0193736) discloses the use of a

Serial Attached SCSI expander in a data processing system. Young et al. (U.S. Patent

No. 6,804,739) discloses a structure and method for message snooping in SCSI bus

expanders. Chan (U.S. Patent Publication No. 2004/0225785) discloses a hybrid

switching architecture in a data processing system. Loffink (U.S. Patent Publication No.

2005/0108452) discloses a system and method for communications in a Serial Attached

SCSI storage network. Marushak et al. (U.S. Patent Publication No. 2005/0138261)

discloses managing transmissions between Serial Attached SCSI devices. Banerjee et

al. (U.S. Patent Publication No. 2005/0041657) discloses a switch for implementing

read only zones in a Fibre Channel fabric. "Serial Attached SCSI Specification,

Revision 1.1" (T10 Technical Committee) discloses Serial Attached SCSI specifications

as of 24 January 2004. "Serial Attached SCSI Expanders: Key Components for

Powering Storage Growth in the Enterprise" (Griffith) discloses emerging technologies

related to Serial Attached SCSI.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Faisal Zaman whose telephone number is 571-272-6495. The examiner can normally be reached on Monday thru Friday, 9 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rehana Perveen can be reached on 571-272-3676. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

fmz

REHANA PERVEEN
SUPERVISORY PATENT EXAMINER
11/9/2006